BOOK REVIEW

Ribeiro, J. S. da S. et al. 1999. Flora da Reserva Ducke. Guia de indentificação das plantas vasculares de uma floresta de terra-firme na Amazônia Central. 800 pp. Softcover. ISBN 85-211-0011-76. INPA (Brazil) and DFID (U.K.). Retail price: $50 U.S. (through http://www.balogh.com).

I am not normally one to gush praises on a new flora book, but this one deserves a score of 12 on a scale of 0 to 10 (I admit to giving extra credit on my exams). Why such a high rating? Because this book excels in a number of important criteria, such as high information content, richness of graphics, full-color pages, high degree of innovation, reasonable price, and all this for a small reserve near Manaus in central Amazonian Brazil that shares a good number of its species with the much broader Amazon basin and neighboring countries. The only downfall for some will be the Portuguese text, but the book is so graphics-oriented and self-guiding that it is still very useable by readers not familiar with that language. Still, an English translation of this book would be welcomed by many.

The book is a field guide—in the true sense—something you can actually bring into the field with you and use to identify forest plants. In fact, it conveniently comes with a transparent, thick plastic jacket that wraps around the open face of the book and secures to the rear dust cover with a Velcro strip. Neat! It is designed for ease of use, that is, non-technical and focused mainly on vegetative characters, since so often the plants (especially the trees) one encounters in tropical forests lack flowers or fruits at the time of one's visit. The flora covers 2175 species of vascular plants, each one illustrated by color photographs that are diagnostic of that particular group. For instance, nearly all trees have small photographs of the outer bark, a bark slash (to show exudates or inner cortex characters), an entire leaf, a detail of leaf venation, and often some other distinguishing feature such as a leaf gland or pulvinus. The species entries themselves do not include images of flowers or fruits, but at the beginning of each family, there are composite plates showing a large part of the diversity of flowers and fruits in the family members of the reserve (take a look at pages 152 to 155 to be amazed by the close-up photos of Lauraceae flowers and fruits!).

The Ducke Reserve is a 10 × 10 km forest preserve situated on the outskirts of Manaus. It has been the site of many research projects and silvicultural experiments over the past decades, but has now become a virtual island of forest amid the suburban sprawl of the capital of Brazilian Amazonia. The much broader geographical utility of the flora derives from the habitat diversity that is present in the reserve. There are four main vegetation types, associated with different soils and drainage patterns: (1) hilltop plateau forest, with clayey soils and good drainage; (2) slope forest, actually a gradient from the hilltop forest down to more sandy and poorly drained soils lower down; (3) "campinarana," or what might also be called "Amazonian caatinga," lower forests on white-sand spodosol soils; and (4) "baixio," or alluvial plains along streams that have poor drainage and are often waterlogged. Only small streams traverse the reserve, so it lacks the seasonally inundated areas known locally as "varzea" or "igapó."

I particularly recommend the illustrated glossaries, which cover pages 24 to 95. They are the best I have seen anywhere and include collages of small photographs of particular characters, for instance leaf glands, exudates, stilt and tabular root variations, leaf types and shapes, among many others. Identification works by a technique of nested diagram boxes with the characters written in or sometimes illustrated, leading to the actual species pages with further diagram boxes that lead to groups of species that can be perused and compared (there are short diagnostic text descriptions to accompany the graphics). Another endearing aspect of the book is feature boxes, or vignettes, interspersed in particular families. For instance, under Clusiaceae, a feature box (p. 253) illustrates and narrates the recently published story of parakeet pollination in *Moronobea coccinea*. There is also a valiant attempt at a "rapid key" that uses little colored markings on the right-hand margin of species pages to narrow down a series of criteria listed on pages 94 and 95. It is a great concept, though somewhat awkward in practice.

Let me cite a personal example of how useful this book is as a field guide. During a recent trip to San Carlos de Rio Negro, Venezuela, some 1000 km to the north, Gerardo Aymard and I collected a sterile canopy tree with bipinnate leaves, clearly a legume and to our eyes likely an *Abarema* species, but one we had never seen with such huge, "dixie-cup"-like petiolar glands. Returning to Caracas, I searched the manuscript of the Mimosaceae for the

Flora of the Venezuelan Guayana and then looked through the entire family at the National Herbarium (VEN), to no avail. It took me a mere five minutes to follow the keys through the Ducke Reserve book and come across a very likely candidate, *Abarema adenophora*. Upon consulting Barneby and Grimes's (1996) superb monograph of the genus, I confirmed the identification, the first report for Venezuela.

My only real quibble with the book is in the introductory section, where the authors briefly discuss the diversity and phytogeography of the reserve. As one of the causes explaining the high diversity of the area, they discuss and actually depict a hypothetical Pleistocene "Lago Amazonas" reaching from the base of the Andes to nearly the mouth of the Amazon and draining through the present-day Orinoco River to the Caribbean rather than into the Atlantic. The original paper postulating this lake (Frailey et al., 1988) presented some evidence of the existence of a lake in the *upper* Amazon (in Acre State, close to the border of Peru and Bolivia), but their extrapolation of the extent of the lake to the lower Amazon and draining out through the Orinoco was and continues to be highly speculative. However, a recent paper by Oliveira and Daly (1999), whose interpretation the Ducke book repeats, takes this shaky concept and makes it appear as widely accepted dogma. Likewise, the same section of the book steps into the "refugia" quagmire, asserting that the area of Manaus is a species refugium characterized by a high degree of local endemism with elements from many different phytogeographical regions. It is well known (Nelson et al., 1990) that Manaus is the epicenter of plant collecting efforts in the Amazon, and that other parts of the basin are so woefully undercollected or in fact totally *un*sampled that any such conclusions stand on very slippery ground.

These small details aside, this book is a truly masterful work, many years in the making, and deserving of all the praise and wide distribution it can get. Mike Hopkins, one of the 14 authors listed on the title page, merits special credit for managing the project and overseeing the team of very capable Brazilian botanists who carried out most of the work, both in the field and in the office. —Paul E. Berry, *Department of Botany, University of Wisconsin–Madison, 132 Birge Hall, 430 Lincoln Drive, Madison, Wisconsin 53706, U.S.A.*

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